

**Macomb County Blue Ribbon Commission
On
Lake St. Clair**

August 28, 1997

FORWARD

Chairman John Hertel of the Macomb County Board of Commissioners established the Blue Ribbon Commission on Lake St. Clair because the degraded state of the water quality was having a substantial detrimental economic impact on the County. Instead of improving with time it seemed to be getting worse. While many were quick to point fingers at the likely responsible parties, Chairman Hertel recognized that the complex forces affecting the water quality of Lake St. Clair could not be explained away on a simplistic basis. Because Macomb County has the most to lose, it is appropriate for Macomb County to take the lead.

The Macomb County Blue Ribbon Commission on Lake St. Clair met for the first time on March 19, 1997. Chairman Hertel asked each of the thirty-two (32) members to serve. We accepted this invitation recognizing we were being offered a timely and unique opportunity to reverse the deterioration of a vital natural asset. While Macomb County provided the facilities in which to meet, all other costs were borne by the Commission members. No public funds were expended.

Our "marching orders" from Chairman Hertel were to develop a plan of action within one-hundred-eighty (180) days. We were to identify "what needs to be done and who needs to do it." We formed four (4) subcommittees to address (1) discharges into the Clinton and St. Clair Rivers; (2) run-off from agricultural, commercial, industrial and residential land uses; (3) sewage treatment capacity and capabilities, including storm water concerns, and (4) biological problems and contamination. Each member chose the subcommittee on which he or she wanted to serve. Some members served on two or three subcommittees. Within this very loose structure, we went to work. Each subcommittee set their own agendas and scheduled their own meetings as they evaluated information from the extensive body of work already existing about the ecological condition of Lake St. Clair. The Commission met regularly and listened to presentations by invited experts and interested parties.

During the course of our study, it became clear the problems and solutions for a clean and safe Lake St. Clair are complex but manageable. There are a number of individuals and entities already doing the "right thing" for Lake St. Clair. Unfortunately, budget limitations and lack of priority has rendered some of them ineffective. What is needed is a plan of action for an organized and cooperative effort to achieve the common goal of a clean, safe and healthy Lake St. Clair. Each subcommittee submitted their final report. A drafting committee combined these reports into a consensus document given to the entire commission for review and comment. The entire Commission approved the final Plan of action. A key element of our plan is a recommended organization and structure for its implementation. Our plan of action identifies problem areas, what needs to be done and who needs to do it. It contains numerous specific recommendations. Some require little effort, and many a great effort. Our plan of action, to paraphrase Sir Winston Churchill, does not represent the beginning of the end or even the end of the beginning, to a clean, safe and healthy lake St. Clair. Our plan of action is a means for marshalling international, state and local effort. This must be done. Macomb County must lead this effort if it expects to continue to prosper.

Officially, our duties are finished when our plan of action is delivered to Chairman Hertel. Unofficially, we stand ready, willing and able to assist in its promotion and implementation. We plan to meet from time to time to scrutinize and/or applaud implementation.

Russell LaBarge, Chairman
Blue Ribbon Commission on Lake St. Clair

Dated: August 28, 1997

INTRODUCTION

The problems affecting Lake St. Clair go beyond the borders and control of Macomb County. The Lake St. Clair watershed is part of two countries, one First Nation, one state, one Canadian province, and several counties. Many of Lake St. Clair's recent problems could have been avoided or minimized had existing laws been enforced. Because the Environmental Protection Agency has delegated its enforcement authority to the State, the Michigan Department of Environmental Quality has the major enforcement obligation. The number of monitoring stations has been reduced by more than 70% thus decreasing the information base. The federal, state and local governments have failed to enforce environmental laws, permits and obligations or to fine those violators with a long history of compliance failures. For approximately 20 years, lack of enforcement and lenient permit compliance schedules on the part of all regulators has transformed the National Pollutant Discharge Elimination System permits from a device to limit pollution into a permit to pollute. While in July of 1997 the State made some efforts to strengthen the National Pollutant Discharge Elimination System requirements, more needs to be done. The federal government has similarly failed the people when it negotiates treaties that lack adequate monitoring and enforcement statutes. Despite a "zero discharge" agreement with Canada, Canadian industry is allowed to discharge nearly a billion gallons of industrial waste under the guise of a sewage release. Such behavior must stop. Governments must meet their enforcement obligations. It is unfair to ask individual citizens to pass laws and limit their own activities to save the lake, when government, the servant of the people, allows some to pollute. Without enforcement the recommendations of this commission, even if acted upon, will effectively become void.

People want to know that the water they and their children and grandchildren drink, swim, fish, hunt, and use for boating is safe. Private citizens, industry, agriculture, shipping and municipalities use the water of Lake St. Clair. Each of these uses impacts water quality but to what extent is not well known. Although the technical aspects of the lake are both complicated and confusing, the general public clearly understands the following four concerns:

- * Is the water safe to drink?
- * Can people swim safely?
- * Can our waterways support fishing and hunting for animals that can safely be consumed?
- * That the weeds not limit the recreational enjoyment of the waters.

The general public understands that the ultimate goal of water management must be to eliminate the discharge of harmful materials into the water. Indeed, zero discharge is the stated goal of the Great Lakes Water Quality Agreement of 1979 (as amended). People also understand that this will take much time and careful work. Despite many studies spanning nearly a century, Lake St. Clair ecosystem remains severely challenged.

Lake St. Clair is a vital component in both the economic health and the human health of the region. While progress has been made in reducing pollutants to the Lake, the job is far from complete. Closed swimming beaches and fish consumption advisories serve as clear warnings that the water supply on which millions of people depend is at risk. Protection of Lake St. Clair must be everyone's top priority.

Key Elements in Solving The Problems Facing Lake St. Clair

Four key elements -- Monitoring, Education, Voluntary Action, and Regulation & Enforcement B will all be required to solve the current problems of Lake St. Clair and to prevent future problems. No action by itself will lead to the desired solution; rather actions at many levels must be performed in concert.

Monitoring

Despite the importance of Lake St. Clair to the quality of life and economic health of this region, there presently is no way of measuring the overall condition of the lake. This will require a substantial commitment to monitoring and study so we know where we are in regard to protecting drinking water, safety, swimming, recreating and protecting wildlife habitat. These data must be managed in ways that allow the technical community to access and evaluate them. Similarly, the data must be distilled into a format that is easily grasped by the general public. Current

bacteriological and chemical monitoring must continue and be enhanced. Innovative means of monitoring key concerns must be developed to both limit the cost and assure protection of public health.

Education

People are willing to do the Aright thing. @ Knowing what to do is the problem. Ongoing Education programs targeting elected and appointed officials, planners, teachers, students, and the general public should be strengthened and additional programs developed. Education programs need to address:

- * The impact of individual and collective actions throughout the watershed which impact the lake and its inhabitants
- * The care and maintenance of septic systems
- * The importance of wetlands both to moderate flow and to remove nutrients and pollutants from runoff
- * The problems associated with the industrial use of heavy metals such as copper
- * The impact of exotic species on the ecology of Lake St. Clair.

Voluntary Efforts

We cultivate a sense of stewardship among our citizens and an understanding of how individual and collective actions affect Lake St. Clair. Once people understand the problems facing the Lake, they, and the organizations to which they belong, must be challenged to voluntarily participate in programs addressing these problems. Coordination of voluntary efforts, coupled with appropriate recognition and incentives, should be used to stimulate action.

Regulation

Although several agencies have some role, the State of Michigan is directly responsible for regulating water quality within the State. The standards that are now in place must be enforced. In addition, more biologically relevant standards should be considered.

Twenty-five years have passed since the initial Clean Water Act stated the goal of fishable and swimable waters across the nation. This goal has yet to be achieved. We must not under estimate the importance of regulation and enforcement. Without enforcement many of the gains made over the past 25 years will surely be lost. Responsibility for regulation must also be shared with local units of government. Macomb County government must be more active as an advocate for Lake St. Clair and the watersheds that feed into Lake St. Clair and should take action to approve or reject the recommendations identified in the Clinton River and St. Clair River Remedial Action Plan. It should also encourage local municipalities to take action to approve or reject the recommendations in those plans that apply to them. Local standards must be periodically reviewed and should take advantage of the best available information from research and monitoring programs. Issues such as land use planning, drainage control, septic system management, and soil and sediment control, for example, are all within the purview of the local units of governments. Local governments must step forward and take responsibility for these programs or forfeit their right to manage them.

The Blue Ribbon Commission's Recommendations

The health of Lake St. Clair depends upon cooperation
from everyone.

The Blue Ribbon Commission's recommendations reflect the responsibilities of the residents of our region and those of our upstream neighbors. The Commission believes that by taking responsibility for our own affairs, we can challenge our neighbors to step forward so that together we can have a cleaner and safer Lake St. Clair. The cooperation of our upstream neighbors on the St. Clair River is essential. While Macomb County can impact the near shore aspects of the Lake, the larger issues of water supply protection and control of bio accumulative toxics are dominated by the industrial discharges to the St. Clair River.

THE HEALTH OF LAKE ST. CLAIR

The Great Lakes water quality agreement of 1978 set as one of its goals the "restoring and maintaining the chemical, physical, and biological integrity of the waters of the Great Lakes basin ecosystem." This agreement set forth high standard of clean safe water. Unfortunately, it did not present the detailed list of recommendations required to achieve the high standards set by the authors.

The Ecosystem Objectives Working Group for Lake Ontario defined five objectives that were subsequently incorporated into the Lakewide Management Plan for Lake Michigan, and the Lake Superior Bi-national Program. Rewording these objectives for Lake St. Clair yields the following:

- * The waters of Lake St. Clair shall support diverse healthy, reproducing and self-sustaining communities in dynamic equilibrium, with emphasis on native species.
- * The perpetuation of a healthy, diverse and self-sustaining wildlife community that utilizes the lake for habitat and/or food shall be ensured by attaining and sustaining the waters, coastal wetlands and upland wetlands habitats of the Lake St. Clair basin in sufficient quality and quantity.
- * The waters, plants and animals of Lake St. Clair shall be free from contaminants and organisms resulting from human activities at levels that affect human health or aesthetic factors such as tainting, odor and turbidity.
- * Lake St. Clair offshore and nearshore zones and surrounding tributary wetland and upland habitats shall be of sufficient quality and quantity to support ecosystem objectives for health, productivity and distribution of plants and animals in and adjacent to Lake St. Clair.
- * Human activities and decisions shall embrace environmental ethics and a commitment to responsible stewardship.

Despite decades of studies, the ecosystem of Lake St. Clair remains compromised. The chemical composition of the waters is subject to massive alterations by industrial point sources, municipal discharges, urban storm water runoff, and agricultural discharges. The levels of toxic chemicals still warrant the imposition of fish advisories, and the levels of non-regulated substances such as chloride and sulfate simultaneously threaten indigenous species, and favor the spread of introduced aliens. The virtual loss of rotifers, and the rapid spread of alien species (e.g. Eurasian milfoil, purple loose strife, zebra mussel, quagga mussel, round nosed goby, and the tubenose goby) attest to the lack of a proper dynamic equilibrium and the inability of native ecological communities to regulate the abundance and reproductive success of constituent populations.

High bacterial counts at local beaches have led to beach closing. This is the most obvious result of a long-term decline of the water quality of the Lake but it is by no means the only result. The health of the lake is controlled by its chemical, physical and biological dynamics.

Several factors undoubtedly interact to produce the high bacterial counts and resulting beach closings. Sewage from sanitary and combined sewer overflows and from retention and treatment basin discharges have escaped into the lake. Illicit sewer connections and failing septic fields also contribute sanitary sewage on an ongoing basis (these

releases are illegal and must be stopped).

Nutrients from sources on the St. Clair River have contributed to increases in the abundance of rooted macrophytes. In 1978 only 16% of the lake bottom was covered by aquatic vegetation. By 1994 nearly 87% of the lake bottom was covered (USCOE, 1996.)

Other dynamics in the lake may magnify the problem. Research suggests microscopic water animals called rotifers prey on bacteria. Prior to 1980 rotifers were abundant in the Lake. However, in recent years their population has declined dramatically reducing the rate at which bacteria are consumed.

TOWARD A GOVERNANCE STRUCTURE

The process of making decisions and shaping directions should be accomplished within a structure that offers all individual community stakeholders the opportunity for input on policy direction. There is no existing group or agency that has the constituents, power, authority, resources, or funding to implement all the proposals, or make the necessary policy decisions required to direct the actions needed outlined in this Plan of Action. The heart of any proposal requiring implementation over a broad geographic area, for an extended period, is a responsible, responsive and accountable governance structure. Implementation of the Blue Ribbon Commission Plan of Action requires decisions and directions, and thus a governance structure. The final governance structure should work within the confines of existing institutions and not add another layer of bureaucracy.

RECOMMENDATIONS

Watershed and Local

1. We need a permanent advocate for our lake and rivers. At present no person or agency has the responsibility and therefore the accountability to safeguard our waters. The people of Macomb County want the waters protected and expect Macomb County government to play a leading role in that effort.
2. Three major county departments, by law, have some responsibilities for protecting our waters i.e., the Public Works Office, Health Department, and Prosecuting Attorney's Office. These offices have many other responsibilities as well while these offices can contribute to the solution none of them has the focused role as advocate for protecting our lake and rivers.
3. We believe there should be a division of county government assigned the specific task of protecting our waters. We support the creation of a Water Quality Board and urge that it be the lead county governmental division as an advocate for our water.
4. We understand that the Water Quality Board will not be able to accomplish this goal without working cooperatively with the other offices that have legal mandates and responsibilities. The budget of these three departments will need to be augmented to reflect their new responsibilities. The Water Quality Board should not usurp any of the law based responsibilities of the other offices, but it can be the catalyst for cooperative action.
5. The Macomb County Commission should appoint a seven member Water Quality Board. Each member should serve for a three year term with the terms being staggered. The Board should elect its own chair and other officers for a one year term.
6. The Board should select a director and approve a budget. The director should implement the policy of the Water Quality Board and manage the staff.
7. The Water Quality Board should play a leading role in following the permitting process of sewage facilities. They should act on the public behalf in the hearing and follow-up process. The Water Quality Board should draft policy and design and execute programs using the key elements of monitoring, education, voluntary efforts, and regulation in order to protect our waters.
8. The Water Quality Board would have the responsibility of overseeing the key elements of the Blue Ribbon

Commission Plan of Action and the provisions of The Clinton River Remedial Action Plan as adopted by the Board of Commissioners as well as future environmental and educational initiatives. Cooperative activities at all levels of government should be initiated with other stakeholders on both sides of the border.

9. The Macomb County Board of Commissioners should create a standing committee on the environment and Lake St. Clair.

State

1. The State similarly has broad obligations to protect the citizens and the environment. Noting state government and legislature's long history of enforcement failure we call upon the Governor and the Michigan State legislature to provide the Department of Environment Quality with the funds necessary to enforce existing laws and carry out the charges outline in this Plan of Action, and to direct the Michigan Department of Environmental Quality to do so.

International and National

1. The federal government is clearly responsible for establishing and enforcing federal regulations, and the terms in international treaties and their enforcement. We believe that the enforcement of U. S. laws, and treaties with Canada has been exceedingly lax. The Blue Ribbon Commission believes that the Canadian Government has failed to adequately protect the environment. The Canadian Government should be held responsible for their inaction.

PUBLIC INVOLVEMENT: A PLACE TO START

Macomb County must take the initiative in resolving the critical issues facing Lake St. Clair. The Federal Government and State Government should provide policy and financial support to the local efforts required to address the many issues facing Lake St. Clair.

In order to resolve the issues facing Lake St. Clair, a new partnership involving all levels of government and the community needs to be established. Additionally, formal and informal educational efforts must be enhanced.

RECOMMENDATIONS

Watershed and Local

1. Local advocacy groups should be supported in their efforts to educate and empower the local citizenry to take an active role in solving existing problems and preventing new ones.

2. Local advocacy groups should develop and expand public education on the role of the private home and farm owner in proper runoff management as it pertains to lawns, and farms. Existing programs such as Home-A-Syst and Farm-A-Syst and local Cooperative extension programs provide a good starting point. The Water Quality Board should develop a Lake-Safe public awareness program to educate the public on all issues affecting the lake. Products and services proven to be environmentally safe could be awarded a Lake-Safe seal by the water quality board.

3. The International Standards Organization has undertaken the development of guidelines for managing the environmental affairs of companies and governmental units. We advocate a community based ISO 14000 program wherein local communities develop a comprehensive environmental management system by using ISO 14000 type audits and monitoring to manage pollution and environmental quality. Most importantly, the ISO 14000 guidelines provide a means for local units of government to shift their resources away from prescriptive compliance requirements toward more cost-effective, pollution prevention measures.

4. "Michigan Environment and Relative Risk" identified "Absence of Land Use Planning that Considers Resources on the Integrity of the Ecosystems" as the highest risk facing Michigan's environment. The Blue Ribbon Commission recommends that environmentally friendly land use planning become a high priority in every county and local community draining to lake St. Clair.

5. Local government and advocacy groups must encourage and help fund efforts to facilitate sub watershed management planning, and encourage local citizens to be watershed "watchdogs."

ACTION PLAN

PROTECTING THE DRINKING WATER

Because most of our drinking water, supplied by the Detroit Water and Sewerage Department, is withdrawn at the outlet of Lake St. Clair, it is imperative that this water be protected.

The basic questions to be asked are:

* Is our drinking water safe?

* How do we know that our drinking water is safe?

Providing safe drinking water is the greatest improvement in public health ever made in the United States. Most waterborne diseases are bacterial, and in recent decades water treatment plants have done a good job of monitoring bacteriological water quality. Diseases such as cholera, typhoid, and dysentery are common in less developed countries where wastewater and drinking water treatment are inadequate, causing more than three million deaths in 1995 alone. Half of these deaths were children under the age of 5. Surprisingly, the USA is not free of water borne illness. Individual cases and occasional outbreaks continue to be reported. The cryptosporidiosis outbreak in Milwaukee caused 104 deaths, and 403,000 cases of illness. We can ill afford to be complacent about water quality. New strains of "old diseases" have recently reemerged. These new strains are often resistant to the use of chlorine. For example, 900,000 cases of cholera were reported in Latin America in the early 1990's. These cholera bacteria are resistant to standard water treatments.

While bacterial contamination of water has historically been the major contributor to human illness, chemical contamination is a complex new aspect of this problem. A plethora of substances enter our water supply from multiple sources. Too often, little is known about the potential health effects of these new pollutants, particularly in combination with each other.

Traditional water treatment processes are not efficient in removing many chemicals. Thus, the water supply should be monitored to assure that contaminants levels are known before the water supply is jeopardized. How such monitoring is done becomes a crucial issue.

Because our drinking water is withdrawn from a moving body of water, that is affected by agricultural, municipal, industrial discharges (including atmospheric deposition) and residential and subject to inadvertent introduction of pathogenic organisms, it is important that the monitoring be on the same time scale as flows of these pollutants. We recommend the use of biomonitoring by local water suppliers, in keeping with Amendments to both the Federal Safe Drinking Water Act (1996), and the Great Lakes Water Quality Agreement (protocol of 1987, Annex 2). Aquatic animals, such as fish and amphibians can be placed in the water allowing direct and continuous observations on the impact of water quality on various aspects of their life including: survivorship, growth, reproduction and development. These biomonitors are used to assess the levels of toxic metals, and organic compounds including carcinogens. The use of biomonitoring is extremely important, as it is the most reliable means of assessing the impact of chemicals in combination.

RECOMMENDATIONS

Watershed and Local

1. The Blue Ribbon Commission advocates that local water suppliers adopt continuous real time biomonitoring of the water taken into drinking water treatment plants, and that distributed to users.

2. Local health departments in cooperation with other groups should continue vigorous education of citizen and local government officials on ground water protection methods.
3. The Macomb Water Quality Board should establish a regional task force to work cooperatively with the Detroit Water and Sewerage Department in monitoring and recommending actions pertaining to source water protection.

State

1. The legislature should fund the surface water quality division to the level identified by the department as necessary to adequately monitor the state waterways, and in particular the St. Clair River and Lake St. Clair.
2. The Michigan Department of Environmental Quality should require the establishment of continuous biomonitoring programs for ground waters and surface waters used to supply public drinking water.
3. The Safe Drinking Water Act of 1997 establishes State Revolving Funds. State are required to assess their drinking water source quality. The State of Michigan should designate 10% of the State Revolving Fund to carry out this mandate. The Lake St. Clair Watershed should be used as a demonstration project.

International and National

1. A network of continuous in-stream monitoring stations should be established and maintained by the United States Environmental Protection Agency and the Environment Canada. Biomonitoring should be strongly considered with program guidelines based on the health of native species rather than non-native species. Such programs should examine both acute and chronic exposure using both real-time and long-term developmental and bioaccumulation studies.
2. The United States Environmental Protection Agency and the Environment Canada should require the establishment of continuous biomonitoring programs for high risk permit holders that introduce toxic materials into the environment e.g. disposal wells and industrial discharges.

SWIMMING, BODY CONTACT, AND RECREATIONAL USES

Bacteria, viruses, other pathogens, and chemicals are all threats to recreational uses and body contact. Bacteria, viruses and pathogens come from human sewage, wild animals, water fowl, domestic animals and some agricultural practices. These sources are heavily influenced by storm events. However, high bacteria counts may exist during dry weather conditions. The chemicals come from industry, agriculture and residential activities from both permitted discharges and storm water runoff.

Sewage Management

Untreated sewage has no place in the waterways of our country. Government must insure that sewage is properly treated and controlled. The most obvious areas where untreated sewage is currently entering our surface waters are sanitary sewer overflows, illicit connections, failing septic systems, and runoff from agricultural lands. Several of these conditions are illegal. While retention treatment basins are designed to capture runoff from combined sewer overflows and reduce the impact on receiving waters, these discharges like those from all wastewater treatment facilities should be closely monitored and held to stringent permit standards. Failure of retention basin operations to comply with permit restrictions has allowed undesirable conditions to become common.

RECOMMENDATIONS

Watershed and Local

1. Macomb County and other concerned counties should urge downspout disconnection where practicable in both combined and separate sewer system communities to delay the peak discharge rates from individual site.

2. The prosecuting attorney should continue his efforts to abate any nuisance that threatens to pollute the Lake or its tributaries.
3. Communities should identify and limit the sources of fecal indicator bacteria contamination in local systems.
4. The Macomb County Health Department should enhance and maintain ongoing water quality monitoring programs, and identify sources of contamination within the county.
5. The Macomb County Health Department should work with local environmental advocacy groups to establish educational programs for septic system owners on the proper care and maintenance of septic systems.
6. The Macomb County Health Department should institute preventive and corrective action for non-functional septic systems through the use of operation permits.
7. The Macomb County Board of Commissioners should adopt a policy that permits for septic systems will not be issued unless there is a reserve drainfield.
8. Macomb County Board of Commissioners should mandate the Macomb County Health Department to create and operate a septic field management district, or districts in all areas of the county where septic systems can properly treat sewage provided such systems are well maintained. A user fee should be established to cover the cost of inspections, routine maintenance and component replacement when necessary. This will provide not only funding but also ensure maintenance without an adversarial approach. Systems will not be issued unless there is a reserve drainfield.
9. The Macomb County Board of Commissioners should encourage the extension of sewers to planned growth areas as capacity permits, and maintain functioning septic systems where possible especially in headwaters areas.
10. Macomb County Health Department should encourage use of appropriate alternative technologies (e.g. wetlands, composting, engineered systems, and community septic) where these are better suited than conventional septic systems.

State

1. The Michigan Department of Environmental Quality, as the enforcing agency of federal law, should review all combined sewer overflow facilities' permits to assure that the requirement in law to keep Michigan's waters free of human sewage is being carried out. The Department of Environmental Quality should implement actions with a goal of reducing overflow levels from 1994 by 50% within the next 5 years.
2. The Michigan Department of Environmental Quality must eliminate the financial incentive to pollute by imposing fines for illegal sewer overflow discharges and assessing facilities for the avoided costs of fully treated discharges and earmarking those dollars for facility improvements through the revolving loan fund.
3. The Michigan Department of Environmental Quality must require gutter/downspouts disconnects and other short term facility maintenance efforts to immediately minimize discharges.
4. The Michigan Department of Environmental Quality must require and fund independent monitoring of permit holders to assure compliance.
5. The state legislature should fund a surface water monitoring program to verify compliance of public owned treatment works with the water quality provisions of their National Pollutant Discharge Elimination System permits and fund additional inspections of Public Owned Treatment Works permit compliance.
6. When separation is appropriate, The Michigan Department of Environmental Quality should require a monitoring program of the storm sewer after separation is completed.
7. The Michigan Department of Environmental Quality should support demonstration projects and education programs dealing with proper disposal of boater sewage.

8. The Michigan Department of Environmental Quality must enforce the Michigan Watercraft Pollution Control Act (1970) PA 167 prohibiting the discharge of any litter, sewage, oil, etc., from any watercraft (recreational or commercial) into the waters of the state. All watercraft with toilets must have a holding tank. The contents of the holding tanks must be disposed of properly.

9. The Michigan Department of Environmental Quality must enforce the existing regulations for the proper handling of sewage once it is pumped from boats.

10. The Michigan Department of Environmental Quality should provide necessary resources to implement septage hauling and disposal regulations.

11. The state legislature should enact a law requiring septage hauling manifesting.

12. The Michigan Department of Environmental Quality should request the State Health Department to determine if legislation is required to support local action for septic management districts.

International and National

1. We urge that the United States and Canada enter into a treaty and adequate enforcement provisions with strict standards on the dumping of sewage into our common waters.

2. We would also urge stricter limits on the amount of salts that can be drained into the fresh waters of the Great Lakes.

3. The Coast Guard must enforce the federal Refuse Act of 1899 prohibiting discharge of refuse of any kind into the waters of the United States.

Storm Water Management

Urban non-point source pollution results from rainwater running off industrial, commercial, and residential land uses and highways in an uncontrolled manner. Polluted storm water runoff is a major cause of impairment in most areas of the basins serving Lake St. Clair. Runoff and erosion are directly responsible for six of the eight beneficial use impairments referenced in the Clinton River Area of Concern. This non-point source pollution is intermittent and usually occurs as the result of precipitation when water moving over the surface picks up pollutants. The large variations of the distribution and concentrations of the pollutants makes this source of pollution difficult to assess and control.

Storm water runoff and erosion from agricultural lands can also contribute significantly to water quality problems. Mismanagement of animal waste from farm animals can result in high levels of harmful bacteria and undesirable nutrients in surface waters. Similarly, excessive amounts of pesticides and fertilizers may be carried from croplands in storm water runoff along with significant amounts of suspended solids.

RECOMMENDATIONS

Watershed and Local

1. The Macomb County Water Quality Board should map critical slope areas in the watershed, incorporate these into watershed databases, and provide maps of current and proposed impervious surfaces based on local plans so communities can take preventative steps to limit runoff.

2. The Macomb County Department of Public Works should identify ownership and maintenance responsibilities of established drains. Responsible parties should remove log jams and incorporate stream-bank shoreline protection programs.

3. The Macomb County Public Works Department in conjunction with the Natural Resource Conservation Service

and Surface Water Quality Division of the Michigan Department of Environmental Quality should develop a uniform soil erosion and sedimentation control program throughout the watershed to maintain better performance even though farmlands are exempt from regulation under the Michigan Soil Erosion and Sedimentation Control Act.

4. The Macomb County Public Works Department should convene a task force, with representatives from all watershed local enforcing agencies, state, and other relevant agencies to assess the status of soil erosion and sedimentation control and determine means to obtain more effective control
5. The Macomb County Public Works Department should identify, prioritize, and undertake joint efforts on the agricultural uplands and drains in the watershed to reduce flooding and erosion.
6. Departments of Public Works should protect headwaters and tributaries from further channelization by incorporating flow patterns into criteria for drain design and storm water management, and by developing alternatives to current drainage practices.
7. Departments of Public Works should coordinate activities necessary to undertake storm water management planning, and incorporate water quality as well as water quantity into criteria when being petitioned for new drainage projects.
8. The Macomb County Health Department must determine responsibility for control of the discharge and require implementation of actions to correct storm sewers and drains containing excessive levels of bacterial contamination.
9. Local governments should adopt storm water management ordinances requiring on-site management practices minimizing the need for expensive remedial public works. Similarly storm water should be controlled at the source to avoid downstream flooding, water quality degradation, and loss of stream habitat.
10. The Macomb County Board of Commissioners should commit funds to increase monitoring by the Health Department.
11. Local units of government should modify their subdivision code to preserve and create vegetative buffer strips along waterways to filter runoff as well as provide wildlife habitats.
12. Local units of government must encourage staging and scheduling of construction activities and immediate re-vegetation of critical areas to reduce discharges of suspended solids to watercourses.
13. Local units of government, and advocacy groups should seek help from the Michigan Department of Environmental Quality Surface Water Quality Division in preparing grant proposals under Section 319, as well as other funding sources (including the Michigan revolving fund) for Non Point Source Pollution of watersheds.
14. The Macomb County Health Department must license, and educate the lawn-care businesses so that environmentally safe materials and practices are used, and sensitive areas protected.
15. Local units of government should revise the subdivision code to limit the amount of directly connected impervious area in new developments and allow road and parking lot runoff to stand and settle or to pass through grassy swales which remove the majority of metals.
16. The Macomb County Public Works Commission should require new developments to retain the runoff from a 10 year storm and release it at a two year undeveloped rate. Any property that undergoes an improvement larger than 50% or that has a change in use should comply with the run off requirements.
17. Macomb County should revise County road standards to encourage the use of swales rather than " improved" drainage systems.

State

1. The Michigan Department of Environmental Quality should continue implementing the storm water permit

program (National Pollutant Discharge Elimination System.)

2. The Natural Resource Conservation Service and/or the Michigan Department of Environmental Quality should monitor and correct animal waste problems.
3. The Michigan Department of Environmental Quality should strengthen their ability to protect the functions of wetlands and flood plains as water retention structures for high flow conditions and for use as natural filters as part of storm water management systems.
4. The Michigan legislature should pass legislation that removes "buffer strips" from tax rolls if certain practices are maintained.
5. The Michigan legislature should continue current programs and expand legislation for new incentives for preservation of open space and agricultural lands and tools for land management that considers environmental protection.
6. The Michigan State Director of Agriculture should identify, prioritize, and undertake joint efforts on the agricultural uplands and drains in the watershed to reduce flooding and erosion.
7. The Michigan State Director of Agriculture should protect headwaters and tributaries from further channelization by incorporating flow patterns into criteria for drain design and storm water management, and by developing alternatives to current drainage practices.
8. The Michigan State Director of Agriculture should coordinate activities necessary to undertake storm water management planning, and incorporate water quality as well as water quantity into criteria when being petitioned for new drainage projects on maintenance projects.

Industrial Discharges

The State of Michigan and the Province of Ontario are responsible for regulating industrial discharges and waste management activities. The Michigan Department of Environmental Quality regulates industrial discharges through National Pollutant Discharge Elimination System permits. The Ontario Ministry of Energy and Environment has a similar program. The regulatory and enforcement authorities are in place. The Blue Ribbon Commission believes current enforcement is ineffective and under-funded. Some commissioners contend that "high compliance to low standards" threatens water quality. All commission members endorse a strong compliance/enforcement program to protect the gains made to date and prevent "back-sliding" in the future.

Active and inactive landfills, waste transfer stations, waste processing plants, hazardous waste treatment and storage, and disposal facilities can also lead to surface and ground water pollution. These sites are regulated under a number of programs. Active landfills are regulated differently from inactive landfills or abandoned dumps. Potential impacts from leachate from these facilities are not well known but could be substantial, and thus must be studied. Such facilities occur along both sides of the St. Clair River. Similarly, the major chemical corporations are also found along both sides of the St. Clair River. This river, by virtue of its flow and importance to industry is of paramount significance to the quality of water in Lake St. Clair.

The St. Clair River is about 40 miles long from the source at Lake Huron to the tip of Seaway Island on the northern edge of Lake St. Clair. Near Port Lambton some 8 percent of the water is diverted into the Channel Ecarte while, the main body of river changes course. At Russell Island near Algonac, the river splits into the North Channel and the South Channel, with the South Channel carries some 70% of the flow. These changes in the nature of the river, mix the three streams and the pollutants they carry thus introducing pollutants from Canada to U.S. waters.

Theoretically, the flow of the St. Clair River can completely change the water in Lake St. Clair in as short a time as nine days. The volume of flow is in excess of 5 billion gallons per minute (all other rivers flowing into Lake St. Clair account for less than 5% of the water). The scale of the St. Clair River flow can greatly reduce the risk to human health associated with any single release of toxic substances into the river. Five thousand gallons of highly toxic material is but one part in a million if completely dispersed into this flow. It is this point of view that has

dominated public policy. However many kinds of materials (e.g. lead, mercury and polychlorinated biphenyls, (PCB's) accumulate in living organisms over time. This "bioaccumulation" may counteract the effects of dilution and can profoundly effect the health of the human consumers.

Local

1. Health Departments should establish and maintain a database of all industrial activities and the types and quantities of toxic substances handled in conjunction with those activities.

State

1. Industries should equip discharges with real-time, continuous biomonitors to ensure that discharge waters are not harmful to life on a case by case basis as part of their National Pollutant Discharge Elimination System program. Long-term biomonitors should be used to determine the effects of chronic low level exposure to such discharges. This information should not be viewed as proprietary, but should be made readily available in real-time to the County public health department.

2. The Michigan Department of Environmental Quality should be required to utilize fines paid for past pollution recovered by the state attorney general be spent only on environmental actions within the watershed where the pollution occurred.

RECOMMENDATIONS

International and National

1. The International Joint Commission has called for zero discharge of toxic materials. While we support that goal, the reality at the moment is far different. Until that goal is achieved both the Canadian and U.S. governments are responsible for ensuring that their regulations are adequate and enforced. More research on the affect of toxicants is required. More stringent standards are likely to be required.

2. Existing treaty obligations governing industrial, municipal and other discharges are not adequate to protect the health of citizens and of sensitive native species. The International Joint Commission must diligently execute its role as defined in this treaty.

While there was not consensus on the role of bacterial predators in limiting bacterial populations, some Commissioners cited research showing tiny water animals called rotifers consume vast quantities of bacteria and algae in a healthy lake. There are many such animals in a single drop of good lake water. Because lake water is changed very rapidly, the parts of the lake that are flowing like river channels will not be impacted by chemicals that kill these bacterial predators. However, backwaters -- areas where water is sometimes trapped will be profoundly affected. Dr. Terry Snell, Georgia Institute of Technology, found that copper in as few as 6 parts per billion will kill rotifers. This may be one of the reasons rotifers have all but disappeared from Lake St. Clair. Major sources of copper include: 1) copper sulfate used to kill weeds in canals, streams, and ponds; 2) copper released into storm water from care brake systems since the banning of asbestos; and, 3) copper anti-fouling material that is power washed from the bottom of boats. It is hoped that the International Joint Commission and Environmental Protection Agency will clearly establish the impacts of metal concentrations on zooplankton and, particularly, the subsequent impact of the loss of rotifers on bacteria populations in Great Lakes species.

FISHING AND HUNTING

While fish advisories persist for Lake St. Clair, little attention has been given to the other wildlife such as waterfowl, muskrats, and turtles that are eaten by people. Waterfowl are often migratory, and thus the concentrations of toxins

in their flesh may not be dependent on local ambient levels. However, not all waterfowl migrate and thus study of the toxins in these non-migrants is warranted. Muskrats and turtles can have high concentrations of toxins, even those normally confined to the sediments. There are five major sources of toxicants for fish and wildlife:

* Industry

*Agriculture

*The atmosphere

*Urban runoff

*Aquatic sediments

Many of the methods for controlling these sources were discussed earlier in this report. The following recommendations are institutional in nature and are specific to fishing and hunting.

RECOMMENDATIONS

State

1. Michigan Fish Advisories should be consistent with U. S. Environmental Protection Agency guidelines.
International and National 1. Toxicity testing of game fish should continue by both the U. S. Environmental Protection Agency and Environment Canada. Risk assessment studies need to be initiated to determine the overall exposure and risk of various users from all of the wild organisms consumed by people.
2. Both acute Real-time Bio monitoring and long term developmental and bioaccumulation monitoring need to be established by the U. S. Environmental Protection Agency and Environment Canada.

NONINDIGENANCE AQUATIC SPECIES (AQUATIC NUISANCE SPECIES)

The impact and economic loss due to aquatic nuisance species is staggering. From the sea lamprey to the zebra mussel, such species cost the Great Lakes economy millions to hundreds of millions of dollars annually. It is virtually impossible to get rid of an aquatic nuisance species once it is established. Therefore, attention must be focused on preventing the entry and establishment of these species. The present treaty covering the discharge of ballast waters applies only to ships that are coming from outside North America, and requires an exchange of ballast water in the open ocean. This ocean water can then be discharged into the Great Lakes. The presumption is that marine species are not adapted to the freshwater and will either be killed or out-competed by the native freshwater species. The abundance of marine algae and fish (the round and tubenose goby, for example, are from the Black and Caspian Sea) belies the validity of this assumption.

RECOMMENDATIONS

International and National

1. The Macomb County Commission should petition the U.S. Environmental Protection Agency, Environment Canada and the International Joint Commission requesting that treaties be re-visited to require that ballast water be completely sterilized or discharged into a closed containment treatment facility. The treaty needs to be extended to all ships discharging ballast water in Great Lake waters.
2. The Blue Ribbon Commission supports continued funding of programs that control aquatic nuisance species.

AQUATIC WEEDS - BOATING

The heavy growth of aquatic plants continues to threaten the use of the Lake by boaters. Many believe the weed growth exacerbated the public health problem by trapping fecal contaminated waters in the near shore areas. The

abundance of aquatic plants resulted from high levels of nutrients such as phosphorus coupled with higher light penetration. Most waters of the Great Lakes are oligotrophic, that is, having low levels of nutrients. However, discharges and runoff into the Great Lakes increase the concentration of nutrients particularly phosphorus. This increase in nutrients causes increased algae and plant growth. The increase in algal growth is not currently apparent only because the zebra mussels have removed so many algae from the water. In the absence of the zebra mussels, the water contains enough nutrients to sustain an abundance of both algae and plants.

Phosphorus levels have been significantly reduced in the water column of the Great Lakes since the 1978 Water Quality Agreement - phosphorus reduction objectives have been generally met. The 1988 Connecting Channels Study concluded phosphorus inputs were not a concern for Lake St. Clair. At the same time they documented a tremendous increase in phosphorus loading as water passed through the St. Clair River and Lake St. Clair. The Commission has concluded that any increase in phosphorus could be detrimental to the Lake and efforts should be made to reduce loadings. It would be useful to convene a panel of experts for a discussion of phosphorus management objectives for Lake St. Clair to resolve differences in opinions. Nevertheless, the problem is not apt to be immediately solved. Some experts believe that there is sufficient phosphorus in the sediments of Lake St. Clair, from historical discharges, to feed aquatic plants for decades even if all current inputs of phosphorus ceased.

Clearly, phosphorus must have been quite abundant in 1994 otherwise the plants could not have achieved such tremendous growth. The source of the phosphorus has been attributed to agriculture, sanitary sewer overflows, combined sewer overflows, septic fields, birds, and industry. Definitive studies have not been conducted nor are they possible retrospectively. However, each community will need to evaluate and abate potential sources of all major plant nutrients-- particularly phosphorus and nitrates.

RECOMMENDATIONS

Local

1. Local units of government should establish ordinances and education programs to encourage the preservation and creation of wetlands with assistance from watershed-based organizations, nature centers and other environmental educators. Phosphates are used in fertilizers and this source must be addressed. Lawns that slope directly to water doubtlessly deliver high levels of phosphate fertilizer to the water. Passing the runoff water through a constructed wetland before allowing it into open water would reduce the phosphate levels of Lake St. Clair because the plants in the constructed wetlands would utilize the phosphorus before it entered streams, rivers or the lake. These wetlands should be as local as the discharges themselves. Every golf course or backyard that borders the water should have a wetland buffer.
2. Local units of government should pursue comprehensive watershed management on a subwatershed basis utilizing the National Pollutant Discharge Elimination System and State General Permits.

State

1. Funding should be provided to municipalities and advocacy groups to determine the size, and composition of existing local wetlands which could be used to reduce the level of fertilizers moving from lawns into surface and ground water
2. The Blue Ribbon Commission requests that the State Environmental Science Board study the impact on the ecosystem of the use of copper sulfate to control aquatic vegetation.
3. The Blue Ribbon Commission requests that the State Environmental Science Board study the impact of anti-fouling paints on aquatic ecosystems.

International and National

1. The International Joint Commission should study the impact of nutrients on Lake St. Clair and determine if regulations should be expanded to cover all major plant nutrients, not just phosphorus.

2. The Environmental Protection Agency and Environment Canada should determine if more stringent air quality standards are needed to reduce the airborne nutrient load.

3. The Michigan Congressional Delegation should work to increase funding for meeting the goals of the Clean Water Act.

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